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# GENERAL NOTES.

## GEOGRAPHY AND TRAVELS.[1]

ASIA.—*The Sanpo and the Irawadi.*—The chief paper in the May issue of the Proc. Roy. Geog. Society is upon the disputed question of the sources of the Irawadi. As no one has yet followed the Sanpo from Thibet downwards, it is still unproved whether it enters the Irawadi or the Brahmaputra. Mr. Robert Gordon opposes the commonly received idea by advocating the Irawadi view. He bases his belief upon the following points:

(1) The Salween, which flows to the east of the Irawadi, has been proved to rise north of latitude 30°, and thus the country which was formerly supposed to supply the Irawadi is now known to be the watershed of the Salween.

(2) The Irawadi at Bhamo, the point where it first became known to western geographers, is still one of the largest rivers in the world, containing probably two-thirds of its volume in the delta. The average discharge at the delta is about 521,794 millions of cubic yards, very nearly four-fifths of that of the Mississippi. But three-fourths of this vast discharge come down in the months of July, August and September. August has twenty-two per cent of the entire discharge, February and March only one and a half per cent. At Bhamo Mr. Gordon calculates the ordinary high-water capacity at 900,000 cubic feet per second.

(3) Chinese geographical annals, extending over twelve hundred years, and corroborated by the direct statements of French missionaries and others, give direct evidence that the Sanpo is the Irawadi, and maps, names of rivers, etc., give indirect evidence to the same effect.

Mr. Gordon quotes Count Szechenyi as follows: "Almost all the Tibetans who could furnish information about this country gave as an answer to my question, 'Where does this river come from?' 'From Lassa.' According to Chinese and Tibetan sources, the Irawadi is no other than the lower course of the Tibetan Sanpo." Not only do the old Chinese geographers connect the Sanpo with the Irawadi, but the Chinese official map, made after the surveys of the French missionaries in the last century, does the same. The imperial geography of the Thung dynasty (617–907 A.D.) says that the great Kin-sha-Kiang is made up of two rivers and then passes by Mano and Tchenago (Bhamo and Tshempenago). It adds: "There is no doubt that this river is the Yaroo Sanpo of Thibet." The Emperor Kang-hi says that the Yaroo Sanpo enters the kingdom of Burma. The Yunnanese call the Upper Irawadi the Ta-Kin-sha-kiang, or Great Kin-sha river, while the Yang-tse-kiang is the Sui Kin-sha-kiang, or Little Kin-sha river. Ta-Kiu-kiang, the official Chinese name for the connecting link between the Sanpo and the Irawadi is identical with Nam-Kiu-long, the name given by the Shans who live upon it, both meaning the Great Kiu river. The explorations of Hindoo surveyors have carried the Sanpo to the east of the point where it was formerly supposed to enter Assam, but the lower courses of the affluents of the Brahmaputra were immediately twisted upon the maps so as to still show the union of the Sanpo with the Brahmaputra.

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[1] This department is edited by W. N. LOCKINGTON, Philadelphia.

(4) It is impossible, on the supposition that the Zayul-Chu is the upper course of the Eastern Brahmaputra and the Sanpo that of the main branch of that river, to account for the volume of water in the Irawadi at Bhamo. A drainage area of from 5000 to 8000 square miles, which is all that could in such a case be left to the Irawadi, could not possibly yield so great a volume.

(5) The Zayul-Chu, which is said to be the Eastern Brahmaputra, may prove to be an affluent of the Irawadi. Mr. Gordon goes into elaborate arguments to show that Rima and Sama, places upon this river, are some thirty miles farther to the north-east than they are placed by Captain Wilcox (who did not visit them). In this half degree there is room for the Sanpo to flow to the Irawadi. The volume of the Zayul-Chu is greater than that of the Upper Brahmaputra.

(6) The Brahmaputra influents, even if the Sanpo is barred out by the range of mountains upon its southern and eastern borders, have basins sufficiently large to account for their dimensions. The Subansiri has 7000 square miles and a discharge of 240,000 cubic feet per second; the Eastern Brahmaputra 7000 square miles with 326,000 cubic feet, and the Dihong, which some believe to be the Sanpo, would without it have 7500 to 12,000 square miles, which, in the rainy climate of the southern slopes of the Himalayas, would account for its volume of 423,000 cubic feet per second.

In reply General J. T. Walker attacked particularly the arguments connected with the Zayul-Chu, certainly the weakest part of Mr. Gordon's paper.

*Corea.*—According to Mr. Carles there is in Corea a great disproportion between the numbers of the sexes, the males being the more numerous. There seems to be no evidence of female infanticide, but a greater number of deaths among girls in infancy. As a land of large hats Corea is unsurpassed. At Phyong Yang, a large town on the west coast, the hats worn by the poor women are baskets three and a half feet long, two and a half wide and two and a half deep, which conceal their faces as effectually as does the white cloak which women of a better class wear over their heads. The men wear a somewhat smaller basket of the same shape. It requires both hands to keep it in place. A similar structure, of a size but little larger, is used to cover fishing boats. The monument erected over the grave of a doctor of letters is the trunk of a tree painted like a barber's pole up to a height of some thirty feet. The top and branches are cut off, and on the summit is placed a slim carved dragon twenty feet long, with a head like that of an alligator. Mr. Carles reports, contrary to the statements of some other travelers, frequent evidences of mineral wealth.

*M. de Mailly-Chalon's Journey.*— M. de Mailly-Chalon gives in the Bulletin de la Société de Geographie a paper on a journey in Manchuria, from Peking through Kirin to Ninguta, and then along the Tiumen to Vladivostock. The journey the whole way was along the Corean frontier. From Vladirostock the travelers proceeded to Tomsk, thence to Samarkand, through Karshi to Bokhara, to the Amou-Darya at Charjni, down that river to Petro-Alexandrovsk, thence to Khiva, and lastly across the Kara-Kum to Merv, Sarakhs and Meshed.

OCEANICA.—*New Zealand.*—The April issue of the Proceedings of the Royal Geographical Society contains an account of a recent exploration of the King country of the North island, New Zealand. This country, containing some 10,000 square miles, is the Maori stronghold, and white men were, after the war of 1863–64, forbidden to enter under pain of death. It had thus never been surveyed prior to Mr. Kerry-Nicholl's expedition in 1883. In the course of 600 miles of travel twenty-five rivers not previously shown upon the maps, and two small lakes, were found; the sources of the four principal rivers of the colony, the Whanganui, Waikato, Whangaehu and Manganui-a-te-Ao, were traced; the hydrography of Lake Tanpo in relation to the four distinct watersheds flowing into it was examined; the volcano of Mt. Tongariro (9300 feet) and Mt. Ruapehu (9000 feet), the highest peak of the North island, were ascended, and the geological structure of the Kaimauawa mountains was made out. The region of Lake Taupo is an extended tableland varying from 1500 to 3000 feet in height. In its center lies Lake Taupo, covering over 300 sq. miles and 1175 feet above the sea. Seventeen rivers, besides smaller streams, run into this lake, while the only river flowing out is the Waikato. The southern part of the tableland, known as the Rangipo plateau, rises to 3000 feet, while the part near Lake Taupo is about 2000 feet. Tongariro's active crater is nearly a mile in circuit. Ruapehu is among the largest extinct craters in the world, and is not a cone of scoria like Tongariro, but a gigantic crater of elevation with a base sixty miles around. The Kaimauawa mountains are almost in the center of the island, attain about 600 feet, and extend along a base of about eighty miles.

The Whangaehu river, which rises on the eastern side of Ruapehu, is one of the largest streams in the island, and descends by a series of grand cascades. The waters of the Upper Waikato burst from the sides of Ruapehu very near the Whangaehu, and the streams for a while run parallel, though afterwards they run in opposite directions. The finest forest in New Zealand is that of Te Rangikaika, which covers some 3000 square miles between Ruapehu and the west coast. Mr. Kerry-Nicholls reports that the Maori race is greatly on the decrease.

SOUTH AMERICA.—*Roraima.*—Particulars of Mr. Im Thurn's ascent of Roraima, with some illustrations, are given in a recent number of *Nature*. Koraima and Kukenam are separated by a wide gorge, and seem like two fortresses, with walls 1200 to 1800 feet high, built upon a mountain top 7000 feet in height. The north, east and west sides of Roraima are forest-crowned, but on the south and south-west it is for the most part devoid of trees up to 5890 feet. From here to the cliff-face the slope is steeper and covered with thick undergrowth with few large trees. The cliff of Roraima was ascended by following a ledge of rock running from the tree-covered part up to the summit. The botany of the slope was very interesting, but the top itself is covered with an extremely scanty and insignificant vegetation. There are several pools of water, and on all sides are grouped rocks of the strangest and most fantastic forms—portions of the solid sandstone on which they rest. Bushes three to six feet high, a few scrubby orchids, two species of thick-leafed ferns and a variety of the red Utricularia which grows below, comprised the botany. There is no soil, and no fossils were found.

*The Saskatchewan Region.*—G. M. Dawson (*Science*, April 24) describes the Saskatchewan country or that portion of the prairies which extends north of the northern boundary, as containing an approximate area of 300,000 square miles, and as less than 2000 feet above the sea-level, and thus lower than the corresponding portion of the continent further south. Parts of this area are characterized by scattered groves of aspen and other trees. The Red River valley has an altitude of 800 feet only, and from this level the surface slopes gradually upward at the rate of four to five feet to the mile to the foot-hills. There the horizontal and unaltered strata of the Cretaceous and Laramie formations break against the base of the ancient rocks of the mountains into a series of sharp and nearly parallel flexures. In the central portion of the plains are a tumultuously hilly belt known as the Missouri Coteau, and also a line of indefinite elevations nearly parallel to the Coteau. The most remarkable difference between this region and that west of the Missouri is perhaps the extraordinary abundance of small lakes or "sloughs," evidently connected with the mantle of glacial drift. These usually occupy shallow basins without outlet, many are emptied by evaporation before autumn, and others from the same cause become more or less saline. The North and South Saskatchewan, Red Deer, Bow, and Belly rivers rise far back in the Rocky mountains, and while subject to considerable spring freshets, are generally not in full flood till June or July.

*The Xingu.* — Dr. Clauss recently gave, before the Munich Geographical Society, an account of his explorations of the watershed between the Paraguay and the Amazon. This watershed is 300 to 400 meters high, and is a savannah broken up by forests along the water courses. The watersheds between the tributaries of the Amazons in this region are unknown. Brazilian geographers direct the upper course of the Xingu to the Tapajos, and put the source of the former under 11° S. lat. Eight days after the expedition had crossed the last tributary of the Tapajos they reached a large river which they named the Rio Batovy, and descended in bark canoes to the Xingu. The inhabitants of some Bucairi villages were found to be utterly ignorant of metals. From 8° to 3° S. lat. the Xingu falls 200 meters in a series of cataracts which were successfully passed under the guidance of the Yaruna Indians.

EUROPE.—Dr. F. Suenonius believes that the word "lapp" is derived from *lappa* or *lappah*, "cave" or "recess," a name given by the Scandinavians because the Lapps of earlier times lived in caves or recesses. The mountains of Swedish Lapland are partly Alpine, composed of hornblende, gabbro and eklogite, but principally low rounded "grass" mountains of schist impregnated with chalk. The highest parts of Swedish Lapland are around the sources of the Rapaädnos and west of Lake Paijasjärvi, and in these regions the largest Swedish glaciers occur. About 180 square kilometers are covered with "eternal" ice, reaching several hundred feet in depth. The surface area of the lakes is about one-third of Swedish Lapland.

The Hungarian Society of Geography is engaged in organizing a Magyar expedition for the exploration of the region round the Urals, especially the Baskir country, where Uralo-Altaú peoples are disappearing.

AFRICA.—*African News.*—Dr. Oscar Lenz was sent by the Imperial Geographical Society of Vienna to explore the watershed between the Nile and the Congo. He started in May. ——The Austrian explorers, Dr. Paulitschke and Dr. von Hardegger have returned from the Gallas country. They were amicably received by the Egyptian governor of Harrar. On their return (March 25, 1885) they found Zeila half in ruins.——A government commission has inspected and reported upon the Tunisian forests. In the districts south of the Medjerda valley the so-called forests are a mere brushwood with groups of larger trees, but on the Krumis mountains to the north, exist magnificent forests with trees equal in size to those of France, including cork trees and *Quercus mirbockii.* One forest covers 100,000 hectares.

## GEOLOGY AND PALÆONTOLOGY.

THE MAMMALIA OF THE OLIGOCENE OF BUENOS AYRES.[1]—This memoir, by M. Ameghino, is one of much importance to the history of the Mammalia, and especially to the history of the Pampean and recent faunæ of the neotropical realm. Ever since M. Bravard announced the existence of species of Palæotherium and Anoplotherium in strata within the limits of the Argentine Confederation, the curiosity of palæontologists has been awaiting an explanation of a statement apparently so at variance with the known facts of the science. M. Ameghino, aided by the labors of Professor Scalabrini, has fortunately resolved this problem, and with it has set before us a record of uncommon interest to the students of the Mammalia and of their evolution.

The strata which have yielded the collections studied, are situated on the Parana river. The number of species obtained is sixty-two, which are referred to forty genera, which are distributed into orders as follows: Cetacea 3; Carnivora 3; Artiodactyla 2; Perissodactyla 5; Toxodontia 4; Rodentia 11; Edentata 17. Of these forty genera, sixteen also occur in the Pampean fauna.

Of these forms it is not to be supposed that all have been fully elucidated and their places finally ascertained. This is especially true of the ungulate orders, where the much-needed determination of the foot structures has not yet been made. We may therefore wait until this is done before accepting the reference of the genus Brachytherium Amegh. to the Anoplotheriidæ, or Ribodon Amegh. to the Tapiridæ. The references of the other genera to families characteristically Pampean, is so highly probable as to require less exhaustive demonstration to command belief. It is in these groups that the most interesting contribu-

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[1] Nuevos Restos de Mamiferos Fósiles Oligocenos Recogidos por el Prof. Pedro Scalabrini y pertenencientes al Museo provincial de la Ciudad del Parana; por Florentino Ameghino. Buenos Ayres, 1885, pp. 204. (Extract from the Bulletin Nat'l Academy Sciences, Cordoba, VIII, p. 5.)